

### **Remarks/Arguments**

This paper is submitted in response to the Office Action mailed July 5, 2006. In the Office Action, the Examiner rejected claims 13 and 14 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,271,724 to van Lintel (hereinafter "van Lintel") and by U.S. Patent No. 5,354,032 to Sims et al. (hereinafter "Sims"). The Examiner also rejected claims 15-22 under 35 U.S.C. §103(a) as being unpatentable over Sims in view of U.S. Patent No. 6,148,837 to Irokawa et al. (hereinafter "Irokawa"). Further, the Examiner rejected claims 13, 14, and 17 on the grounds of nonstatutory obviousness-type double patenting over claim 2 of U.S. Patent No. 6,285,115 (hereinafter "the '115 patent") in view of Sims and claims 13-22 on the grounds of nonstatutory obviousness-type double patenting over claim 2 of the '115 patent in view of Sims and Irokawa.

By this paper, claims 13, 15-18, and 21 have been amended to more clearly claim the invention. Support for the amendment of claims 13, 15-18, and 21 may be found in paragraphs [21]-[23] and Figures 2 and 4. New claims 27-35 have been added. Support for new claim 27 and 31 may be found in the specification in paragraph [23]. Support for new claim 28 may be found in the specification in paragraph [31]. Support for new claim 29 may be found in the specification in paragraphs [21]-[23]. Support for new claim 30 may be found in originally filed claim 14. Support for new claim 32 may be found in the specification in paragraph [29]-[31]. Support for new claims 33-35 may be found in the specification in paragraph [31]. In view of the following remarks, immediate allowance of claims 13-22 and 27-35 is respectfully requested.

### **Examiner Interview**

Applicants thank the Examiner for the telephonic interview of October 18, 2006 with the undersigned. During the interview, Applicants asserted that van Lintel and Sims do not disclose, teach, or suggest all of the language of claims 13-22 as discussed below. In response, the Examiner requested that the arguments be presented in this Response to the Office Action in order to better consider the prior art. Applicants also asserted that the double patenting rejection is improper in combining claim 2 of the '115 patent in view of Sims and Irokawa. In response, the Examiner disagreed. Consequently, no agreement was reached at that time.

Rejection of claims 13 and 14 under 35 U.S.C. §102(b)

In the Office Action, the Examiner rejected claims 13 and 14 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,271,724 to van Lintel (hereinafter “van Lintel”) and by U.S. Patent No. 5,354,032 to Sims et al. (hereinafter “Sims”). However, “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP §2131 (*quoting Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). Furthermore, MPEP §2131 provides that “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Quoting Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In this case, independent claim 13 provides “the actuator control circuit applies a control signal to the actuator, the control signal controlling movement of the member relative to the contact surface, and receives an output from the actuator; and a seat detection circuit ... determines contact of the member with the contact surface from the output.” Because claim 14 depends from amended independent claim 13, claim 14 also includes this claim language. However, neither van Lintel nor Sims discloses this claim language.

For example, van Lintel does not disclose, “the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator.” Instead, van Lintel discloses “the piezoelectric disc ... is connected by two electrical conductors 46 and 48 through electrodes (not shown) situated on the faces of the piezoelectric disc to a voltage source 50.” Van Lintel, col. 3, lines 39-42. As is clear from van Lintel, the detection circuit of Figure 5 is separate from the voltage source 50 and is, in fact, not electrically connected to the actuator 30. Consequently, van Lintel does not disclose, “the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator.”

Similarly, Sims does not disclose, “the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator.” Instead, Sims discloses a bimorph disc that has one element that includes:

a separate sense electrode (SE), without direct electrical contact with a main electrode (ME) and optionally further isolated from capacitive electrical coupling and/or indirect piezoelectric coupling from the main electrode (ME) by a guard electrode (GE) held at zero electrical potential. As the piezoelectric

device flexes, a voltage is generated by the sense electrode (SE), which is proportional to the actual displacement of the device. This provides a mechanism for closed loop control of the piezoelectric element as a whole by monitoring voltage of the sense electrode (SE).

Sims, column 4, lines 14-26. In other words, Sims has attached a sensor (SE) to the actuator (ME) that is not in direct electrical contact with the actuator (ME). Consequently, the actuator (ME) does not generate an output, but rather the sensor (SE) generates an output. Thus, an actuator control circuit of Sims is not able to apply a control signal to the actuator (ME) and receive an output from the actuator (ME). Therefore, Sims does not disclose, "the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator."

Consequently, van Lintel and Sims do not disclose each and every element as set forth in claims 13 and 14. Therefore, van Lintel and Sims do not anticipate claims 13 and 14 as amended. Thus, Applicants respectfully request that this rejection be withdrawn.

Rejection of claims 15-22 under 35 U.S.C. §103(a)

The Examiner rejected claims 15-22 under 35 U.S.C. §103(a) as being unpatentable over Sims in view of Irokawa. However, MPEP §2143 states that:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Independent claims 13 and 17 provide "the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator." Claims 15-16 depend from claim 13 and claims 18-22 depend from claim 17 and thus, also include this claim language.

As discussed above, Sims does not teach or disclose, “the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator.” Likewise, Irokawa does not make up for the deficiencies of Sims. Specifically, Irokawa is directed to:

the automatic pneumatic pressure control apparatus 10 basically comprises a microcomputer 16 for being supplied with a reference signal  $S_r$  corresponding to a setpoint through an input terminal 13, the electropneumatic transducer 12 operable by a manipulated variable signal which is an output signal from the microcomputer 16, the pneumatic actuator 14 operable by an output signal (pneumatic pressure) from the electropneumatic transducer 12, and a position detector 20 for detecting a distance by which a stem 18 of the pneumatic actuator 14 is displaced, as a controlled variable signal, converting the controlled variable signal into an electric signal (feedback signal)  $S_f$ , and transmitting the electric signal  $S_f$  to the microcomputer 16.

Irokawa, column 2, line 61 through column 3, line 6. Like Sims, a sensor 20 produces the output used to control the actuator 14 of Irokawa. Because the actuator 14 of Irokawa does not produce an output that may be received by an actuator control circuit, Irokawa, like Sims, does not teach or suggest “the actuator control circuit applies a control signal to the actuator ... and receives an output from the actuator.”

Therefore, Sims in view of Irokawa does not teach or suggest all of the elements of claims 15-22. Consequently, the *prima facie* obviousness of claims 15-22 has not been established. Thus, withdrawal of this rejection is respectfully requested.

Rejection of claims 13-22 under nonstatutory obviousness-type double patenting

Further, the Examiner rejected claims 13, 14, and 17 on the grounds of nonstatutory obviousness-type double patenting over claim 2 of U.S. Patent No. 6,285,115 (hereinafter “the ‘115 patent”) in view of Sims and claims 13-22 on the grounds of nonstatutory obviousness-type double patenting over the ‘115 patent in view of Sims and Irokawa.

Applicants respectfully submit that claims 13-22 are patentably distinct from claim 2 of the ‘115 patent in view of Sims and Irokawa. For example, claims 13-22 provide, “the seat detection circuit determines contact of the member with the contact surface from the output.” Claim 2 of the ‘115 patent does not teach or suggest this claim language. However, the Examiner asserted “a position control circuit could be considered to encompass a seat

detection circuit because the seated position is a position detected by the seat detection circuit.” In contrast to the Examiner’s assertion, the position control circuit of claim 2 of the ‘115 patent operates to “generate the estimated position of the piezoelectric device,” which is distinct from a seat detection circuit determining contact of the member with the contact surface from the output of the actuator.

Furthermore, Sims and Irokawa do not teach or suggest a seat detection circuit that determines contact of the member with the contact surface from the output of an actuator. As discussed above, Sims uses a sensor to determine the displacement of the piezoelectric device. Similarly, Irokawa uses a sensor to detect a displacement.

Consequently, claim 2 of the ‘115 patent in view of Sims and Irokawa does not teach or suggest all elements of claims 13-22. Therefore, claims 13-22 are directed to a different and nonobvious invention and do not unjustly extend patent rights at the expense of the public. Thus, Applicants respectfully request that this rejection be withdrawn.

#### Conclusion

In accordance with the arguments presented above, Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If there are any remaining issues preventing the allowance of the pending claims that may be clarified by telephone, the Examiner is requested to call the undersigned.

Respectfully submitted,



Richard K. C. Chang II  
Registration No. 52,719  
Caterpillar Inc.

Telephone: (309) 636-1126  
Facsimile: (309) 675-1236